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**CRITICAL ANALYSIS TEAM
REVIEW OF SILOS 1 AND 2 PROOF OF PRINCIPLE
BID EVALUATION PROCESS**

May 19, 1998

Fluor Daniel Fernald's Silos Project requested that the Critical Analysis Team (CAT) review (1) the Silos 1 and 2 Proof of Principle (POP) Request for Proposal, and (2) the results of the bid evaluation process as presented by Fluor Daniel Fernald (FDF). The Team evaluated the procurement and decision-making process with emphasis on the following items:

- effectiveness of the contractor selection process;
- ability of the selected vendors' proposals to provide the data to meet the information needs of the technology groupings;
- categorization of the proposals into appropriate technology families; and
- thoroughness and consistency of the FDF reviews, and validity of the results.

The CAT completed a brief analysis of the POP process based on the above workscope. The team found FDF's evaluation process to be thorough and to have resulted in sound technical decisions. The technology families were appropriate and adequately encompassed viable waste treatment alternatives. Further, assignment of technologies to respective technology families was appropriate. FDF expended considerable effort to construct a rigorous evaluation process and, based on the information presented to the Team, appears to have selected the best qualified vendor in each technology family. Further, the process, appears to have effectively eliminated bias from the vendor selection process. Lastly, the large number of credible responses is indicative of a sound RFP and bid process.

While the vendor evaluation/selection process resulted in sound decisions, the process did experience some difficulties. For example, both subjectivity and criteria weighting introduced some inconsistencies into the evaluations. Following are issues that the CAT believes can be used as important lessons learned for future procurements:

- During the evaluation, breakdown of the criteria into specialty areas is important. It is also important that technical personnel review technical aspects of a proposal, e.g. safety people reviewing safety aspects, etc.
- The mix of personnel on the review/evaluation team should reflect the criteria weighting importance. In other words, if technical issues are weighted most heavily, the team should include a high proportion of technical personnel.
- The "relevant experience" criterion didn't appear to be a discriminating factor and may be more useful as pass/fail as opposed to a scored criterion.
- Given the history of the silos project, the application of a successful technology to treatment of silos waste must be emphasized. Because of this, weighting

on adequacy of the technology should be relatively heavy. The project cannot afford failure, and must ensure that proposals are based on sound technology.

- While cost is important, it should not be the primary driver for this procurement decision, especially for technology demonstrations such as this.
- Similarly, quality assurance, safety, and environmental criteria are often weighted too heavily. The Team does not mean to minimize the importance of these criteria, but only to point out the relevant weights should not allow a poor technical proposal to score high because these items are weighted heavily. The difficulty is in communicating a vendor's capabilities in these areas via a proposal -- implementation, not proposal writing, is the key to success in these areas.
- FDF is not a regulatory agency. Making the safety criterion pass/fail essentially put FDF in this position. This goes far beyond the needs of this procurement since no work is being performed on FDF or DOE properties.
- The process should have included pre-award visits and/or telephone conferences with the "short list" vendors, to confirm clear communications and understanding by all parties.
- To reduce subjectivity and ensure consistency, training personnel involved in bid review and evaluation is important.
- Limited subjectivity can be valuable in a procurement process and it should be acknowledged and used. With this in mind, the evaluation process should provide some allowance for limited subjectivity in scoring criteria (e.g. about 10% leeway for individual evaluators). In addition, it is important to utilize the judgment of reviewers in overall ranking of proposals.
- Criteria should be framed to maintain focus on meeting the needs of the procurement. Too many, or inappropriate criteria can dilute the weight of important criteria.

Other project concerns

The CAT is supportive of FDF performing the engineering evaluation of alternatives (including cost and schedule, layouts, sizing, etc.), with some independent review support. This is important to ensure that alternatives are evaluated equally and that the engineering cost estimating approach is consistent.

The submittals required from the contractors as they conduct the proof of principle activities seem to be excessive for a relatively small project (e.g. extensive data sheet information on every major piece of equipment). FDF should evaluate the requested information submittal for applicability and necessity. If simplification is possible, it should be pursued. In addition, submittals should also be reviewed to verify those requiring approval over those for information only.

Strong project management will be necessary in order to ensure that the information requirements and goals of the project are met. The Team is concerned that FDF may not be fully prepared to effectively manage these projects. Reporting, lines of

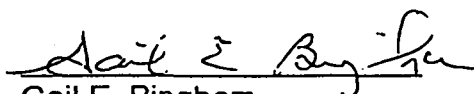
authority and responsibilities (particularly between the procurement, technical and project management functions) must be structured, documented and in-place to ensure project success. While this was not directly within the scope of this review, the CAT remains concerned about silos project management and the preparations being made to assure success.

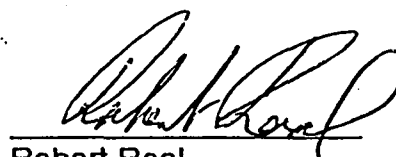
The project management functions should already be assigned (contrary to C.3.1.1 of the RFP, this will likely take more than one person) in order to establish communications with DOE, vendors, regulators and stakeholders, and within FDF itself. Further, a project responsibility matrix and administrative system should be developed to adequately respond to the contractors' many submittals. The contractors reporting requirements are numerous and relatively rigorous and, as a result, FDF's response requirements will be significant and turnaround times short (maximum of 2 weeks).

Obtaining process flow sheets from each vendor should be an FDF priority. Without process flow sheets, FDF will be relying too much on vendors for timely identification of problems. Process Flow Sheets should include material balance, energy balance, technical data used to calculate mass and energy balance, identification of technical assumptions or extrapolations of data, process description, and process control. It is not clear that the required Process Flow Diagrams will contain all these essential items.

Lastly, FDF should ensure that the final report from each vendor addresses potential process scale-up issues. This is very important since these data will be basic to the design of the full-scale facility.

In summary, the evaluation process provided a defensible technical decision supported by a complete record of the decision process. While the Team identified opportunities for future procurement improvements, the outcome of the process was appropriate. If management infrastructure is in place, the proof of principle testing will likely provide the data needs of the project.


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